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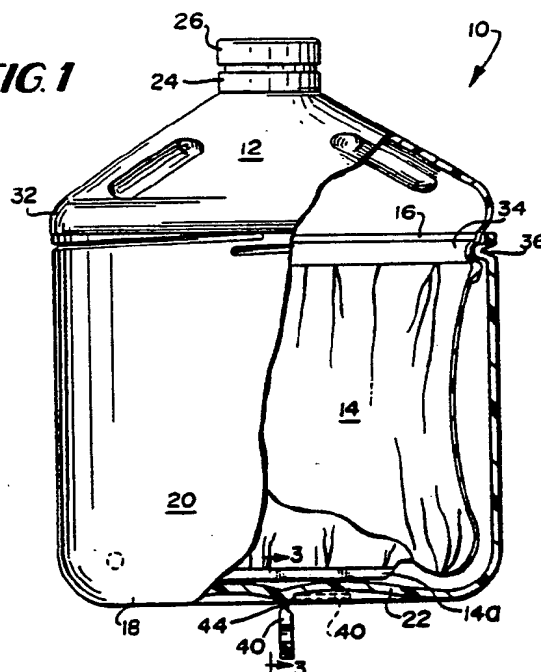
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54 Container with unitary bladder and associated dispenser cap.

57 A container (10) includes a substantially rigid upper container segment (12), a flexible bladder (14) depending from the upper container segment (12), and a lower substantially rigid container segment (20) attached to the upper container segment (12) so that the flexible bladder (14) is housed therewithin. The upper container segment (12) presents a smooth exterior continuation of the lower container segment (20) so that the two segments (12 and 20) visually appear to be formed in a unitary manner. A foldable hanger (40) may be provided integrally on the bottom wall (22) of the container (10) so as to facilitate the container's supported inversion. In one embodiment, the bladder (14) is spaced from the container bottom wall (22) so as to establish a sub-container (70) therebetween. A self-closing dispensing cap (82) is provided which includes a pair of resilient, flexible sealing lips (112, 114) which are defined in part by an elongated discharge slit (108). An overcap (116) is also provided which includes additional sealing means (124, 126) for engaging the sealing lips when the overcap (116) is in a closed position.

FIG. 1



CONTAINER WITH UNITARY BLADDER AND ASSOCIATED DISPENSER CAP

FIELD OF THE INVENTION

This application relates to the field of containers generally. In its preferred embodiment, the invention more specifically relates to containers having unitary or integral bladders, liners or the like. The application also relates to a self-closable dispenser cap for use with containers in general and with bladder-type containers in particular.

BACKGROUND OF THE INVENTION

Many uses actually and potentially exist for containers having internal bladders (hereafter simply called "bladder-type containers" for ease of reference). Bladder-type containers and associated closures or dispensing caps may thus be useful to transport, store and/or dispense a variety of liquid or solid materials for commercial, industrial and/or residential end-uses. For example bladder-type containers could be used in hospital environments as a replacement for intravenous bags, and in other environments as a convenient means to ship, store and dispense potable liquids (e.g., wine or other spirits). Those in this art will undoubtedly realize other possible beneficial uses for such bladder-type containers and associated closures or caps.

Various proposals exist in the art to provide a flexible bladder within a substantially rigid walled container, attention being directed specifically to U.S. Patent Nos. 3,163,544 to Valyi; 4,560,085 to Vom Hofe et al; 3,179,323 to Miller; 2,352,503 to Walton; 2,338,604 to Silveyra; 3,039,648 to Busch; 3,643,854 to Holmes; 3,918,605 to Butler; and 3,765,574 to Urquiza.

Valyi '544 and Vom Hofe et al '085 each disclose a bladder container in which the bladder includes a "thickened" upper portion which is adapted to being connected to an external container in which the bladder is housed. These thickened portions of Valyi '544 and Vom Hofe et al '085 do not extend upwardly from the container and thus do not define, collectively with the bladder, any meaningful volume. Thus, these thickened portions appear to be present merely for the purpose of defining an access opening to the bladder and for connecting the bladder to an upper rim of the container.

Miller '323, Walton '503, and Silveyra '604 suggest that a flexible bladder (which may be closed by means of a suitable cap -- see, Miller '323 and Silveyra '604), is merely housed within an other-

wise rigid external container.

Busch '648 suggests that a bottle, which may be formed from a flexible rubber (or rubber-like material) or flexible plastic, could have its upper portion formed into the shape of a cone which terminates in a neck. Threads are formed on the neck so that a cap having matching threads may be coupled to the neck thereby closing the bottle. The bottle is housed within a metal sheath and is held therein by a plurality of inwardly bent finger structures.

Holmes '854 discloses a container for paints and other like liquids. The container of Holmes '854 includes a carton erected from a collapsible tubular blank, a rectangular lid which is secured to the top of the carton, and a flexible bag having an opening which is peripherally sealed to a skirt depending from the lid within the carton.

A combination container with disposable closure and liner assembly is disclosed in Butler '605 as having a closure element having a main body portion against which a neck of a liner is secured by a peripherally positioned clamp. The liner and main body portion are thus not integral with one another.

An open-ended flexible liner having a flanged collar ring may be inserted into a rigid external container according to Urquiza '574. An aperture is provided in the bottom wall of the external container so that, after the bag is inserted into the external container and filled, its open end may be heat-sealed.

There are also known in the art various proposals for self-closing caps or closures for use with containers, and in this regard, attention is drawn to U.S. Patent Nos. 4,749,108 to Dornsbusch; 4,739,906 to LoTurco; 4,561,570 to Zulauf et al; 3,825,157 to Herzig; 3,773,233 to Souza; and 2,816,548 to Tupper.

Both Souza '233 and Herzig '157 disclose automatic closures for squeezable containers for viscous material. In each case, the closure is formed merely by resilient, flattened lip portions which open under pressure and close upon release of pressure.

In LoTurco '906, a plastic squeeze bottle is provided at its discharge end with an integral stem having a plurality of dispensing apertures spaced about the base of the stem. An over cap assembly, including a retaining ring and a cap is applied to the bottle, the retaining ring having a dispensing stem including an aperture disposed over the bottle stem. Engagement of the surfaces of the respective stems normally preclude escape of the container contents, in conjunction with a protuberance

formed on the interior of the cap. When the cap is disengaged, and under squeeze pressure applied to the bottle, the surfaces of respective stems are forced to separate, allowing the contents to be discharged through the apertures in the base of the integral stem and the aperture in the retaining ring. The seal is reestablished upon the cessation of the applied pressure.

Zulauf '570 discloses a closure similar to that of LoTurco '906.

Dornsbusch '108 discloses a flexible storage and dispensing package which includes a container having a neck portion and a dispensing valve. The valve is formed with a diaphragm provided with an elongated discharge slit. Manual pressure applied to the container is said to force the container contents through the slit, and after the pressure has been removed, the slit automatically closes.

Tupper '548 discloses a resilient sipper-type seal for discharging fluid contents from vessels or containers. The seal normally remains closed to prevent leakage of the fluid, but is forced open by the user when sipping the contents from the container.

SUMMARY OF THE PRESENT INVENTION

According to the present invention, a container is provided which is formed by means of a substantially rigid external container having upper and lower sections coupled to one another (as by mated threaded engagement, heat sealing, adhesive connection, and the like). A flexible liner or bladder is integral with the upper section of the container so that it dependently extends into the interior of, and is housed by, the lower section. The upper container section and the bladder thus collectively establish an interior volume for containing liquid and/or solid materials.

The lower section of the container may be provided with an integral, yet foldable hanger member associated with the lower section's bottom wall. The hanger member is particularly useful to permit inversion of the container of this invention and thus more easily facilitate the emptying of its contents. Thus, the hanger member may be provided in a stowed position such that it is substantially flush against the lower section's bottom wall (thereby presenting no obstacle to the container when it rests upon a flat surface), yet is capable of being folded into an extended position when it is desired to hang or otherwise support the container in an inverted condition.

The bottom of the bladder may also terminate in spaced relation to the bottom wall of the lower container section. In this embodiment of the inven-

tion, upper and lower sub-containers are provided in a unitary manner. That is, an upper sub-container is established by means of the interior of the bladder/upper container section, while a lower sub-container is established by means of the space existing between the exterior of the bladder and the interior of the lower container section. Thus, different (or the same) materials may separately fill the upper and lower sub-containers and remain segregated within the overall container. These materials may then be removed separately (as by separating the integral upper container section/bladder from the lower container section, or alternately, may be mixed within the overall container simply by rupturing the bladder.

The bladder-type containers of this invention may optionally be provided with a self-closing liquid dispensing cap, although the dispensing cap disclosed herein is suitable for use with many other types of containers as well.

In one exemplary embodiment in accordance with this invention, the dispenser cap includes a body portion adapted to receive a primary seal member which includes a pair of opposed, flexible and resilient lips defined by an elongated discharge slit formed in an otherwise closed-end flattened, tubular portion of the seal.

The flexible lips, which project upwardly, away from the container contents, are designed to be forced apart when subjected to liquid pressure, as when the container or bottle is tilted in a discharge or dispensing mode, and to automatically close upon the cessation of such pressure, as when the container or bottle is returned to an upright, or storage mode.

The dispensing cap is also provided with an overcap, preferably integrally formed with and hinged to, the body portion of the dispensing cap. The overcap includes a secondary sealing ring which fits snugly inside the primary seal member when the overcap is moved to a closed position, in overlying relationship with the primary sealing member. In addition, the overcap is further provided with a pair of laterally spaced lugs which engage and hold closed the upstanding lips, again when the overcap is moved to a closed position. In this way, egress of liquid is prevented when the overcap is in its closed position, even if the bottle or container is inverted.

In related aspects, the dispenser cap of this invention may be adapted for use as a plug-type or screw thread type closure for use with correspondingly designed containers.

The above described dispenser cap is especially suitable for use with bladder type containers as described herein, as well as other conventional bladder type containers. This is because the vacuum created in the bladder as a result of dispensed

liquid not being replaced by air, causes an even tighter engagement and closure of the flexible lips, as will be described in greater detail herein.

Other advantages and aspects of this invention will become more clear to the reader after careful consideration is given to the following detailed description of the preferred exemplary embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference will hereinafter be made to the accompanying drawings, wherein like reference numerals throughout the various FIGURES denote like structural elements, and wherein;

FIGURE 1 is an elevational view, partly in section, of a container in accordance with the present invention;

FIGURE 2 is an "exploded" bottom perspective view of the container shown in FIGURE 1;

FIGURE 3 is a detailed elevational view of the hanger member integrally formed on the bottom wall of the container shown in FIGURE 1, and taken along line 3-3 therein;

FIGURE 4 is an elevational view, partly in cross-section of another container embodiment of this invention which is particularly adapted to provide separate sub-chambers therein;

FIGURE 5 is a side view of a combined beverage bottle and dispenser cap in accordance with a further exemplary embodiment of the invention, the dispenser cap being of the plug type;

FIGURE 6 is a partial side view of the combination illustrated in FIGURE 5, but wherein the cap is of the screw-on type;

FIGURE 7 is a perspective view of a plug-type self-closing dispenser cap as illustrated in FIGURE 5;

FIGURE 8 is a partial cross-sectional view of the dispenser cap illustrated in FIGURE 7;

FIGURE 9 is a partial perspective view and partial section of a screw-on type self-closing dispenser cap as illustrated in FIGURE 6;

FIGURE 10 is a partial detail illustrating a primary sealing member of the dispenser cap in a closed position; and

FIGURE 11 is a partial detail illustrating a primary sealing member of the dispenser cap in an open position.

DETAILED DESCRIPTION OF THE INVENTION

A container 10 in accordance with this invention is shown in accompanying FIGURES 1 and 2

as generally including a substantially rigid upper container segment 12, a flexible bladder 14 integrally joined to the upper segment 12 at its lower flange 16, and a substantially rigid lower container segment 18. The upper container segment 12 and bladder 14 may be formed of any suitable plastic material (e.g., polyvinylchloride, or polyolefins such as polypropylene and polyethylene). Lower container segment 18, on the other hand may be formed of the same or different plastic material as compared to container segment 12. The lower container segment 18 is defined by a side wall 20 (which in the embodiment shown just happens to be cylindrical in configuration), and a bottom wall 22.

The upper container segment 12, in the embodiment shown, is generally conically shaped, terminating in a neck 24 so as to define an opening to the interior of bladder 14. However, it is to be understood that the upper container segment may be formed in any expedient or desired geometric configuration provided that it extends upwardly from the lower container segment 18 and thus defines a meaningful volume portion of the total volume established by container segment 12/bladder 14. The neck 24, and hence its defined opening, may conveniently be closed by means of a cap 26. The upper container segment 12 also preferably includes opposing depressed regions 28, 30 which collectively serve as handles to more readily facilitate handling and/or other manual manipulations of container 10.

The lower flange 16 of upper container segment 12 is inwardly radially recessed with regard to the upper segment's base periphery 32 so as to permit the flange 16 to be accepted within the upper portion of side wall 20. In such a manner, the container 10 presents, in external appearance, a smooth continuation of surfaces from the side wall 20 of lower container segment 18 to the base periphery 32 of upper container segment 12. Thus, the container segments 12 and 18 visually appear to be unitary with one another. This unitary appearance could be further enhanced by heat or adhesively sealing flange 16 to an opposing interior region of side wall 20. However, in the embodiment shown, the flange 16 is provided with threads 34 so as to mate with corresponding threads 36 on the upper region of side wall 20 and thus permit the upper container segment 12 to be removably coupled to lower container segment 18.

As is seen particularly in FIGURE 1, the upper container segment 12 defines a meaningful portion (e.g., about one-fourth or more) of the total volume collectively defined by the upper segment 12 and its integral bladder 14. That is, since the upper segment 12 extends upwardly from its flange 16 (and hence its interconnection with the lower con-

tainer segment 18), an additional volume of container capacity is provided as compared to containers which merely define an access opening by means of a thickened section associated with a flexible bladder. And, since a smooth continuity exists between the lower and upper segments, a container which is "unitary" in appearance is achieved as has been mentioned previously.

The bladder 14, as was briefly mentioned, is connected integrally to the rigid upper container segment 12 at flange 16. Thus, although the segment 12 and bladder 14 are formed of the same plastic material, their respective rigidity and flexibility is provided by the relative thickness of these structural elements. That is, the thickness of bladder 14 is such that it exhibits sufficient flexibility while the upper container segment 12 is several times as thick as bladder 14 and hence exhibits sufficient rigidity.

The integral upper container segment 12 and bladder 14 may be formed by any convenient plastic formation technique well known to those in this art. Preferably, the integral container segment 12/bladder 14 is formed according to the blow-molding techniques disclosed in co-pending U.S. Application Serial No. 008,658 filed January 30, 1987 in the name of Edward S. Robbins, III (the entire content of this pending application being expressly incorporated herein by reference). The bladder 14 will be sealed at its lower end 14a (as by means of heat sealing or the like) so that the interior volume established collectively by the upper container segment 12 and the bladder 14 is accessible only through the opening defined by neck 24.

The bottom wall 22 of lower container segment 18 is preferably slightly concave and includes a substantially centrally located integral hanger member 40. Hanger member 40 is normally stowed in a flush relationship against the bottom wall 22 (i.e., as is shown in dashed and solid lines in FIGURES 1 and 2, respectively), yet is capable of being folded (i.e., pivoted) into an extended position (as is shown in solid line in FIGURE 1 and is more clearly shown in that position in FIGURE 3) to facilitate supported inversion of container 10. In this regard, an aperture 42 may be defined in hanger member 40 so as to permit the container 10 to be supported in an inverted condition. Folding of hanger member 40 between its stowed and extended positions is enhanced by providing a region 44 of reduced cross-sectional thickness and thereby to provide an integral hinge with bottom wall 22.

Vent openings 46 may be defined in side wall 20 of lower container 10 as is shown in dashed line in FIGURES 1 and 2 so as to permit ambient air to enter the space defined between the bladder 14 and the lower container segment 18. Vents may

also be provided by means of an interrupted thread arrangement on flange 16 and the upper region of lower container 18. Venting of ambient air into the lower container 18 thus permits the bladder 14 to be collapsed more easily when its contents are being emptied.

FIGURE 4 shows another embodiment of a container 50 according to this invention. Like container 10 discussed above with particular reference to FIGURES 1 and 2, container 50 of the embodiment shown in FIGURE 4 includes a rigid upper container segment 52 (which, it will be noted, is of different geometric configuration as compared to the upper segment 12 of container 10 shown in FIGURES 1 and 2), a bladder 54 integrally connected to segment 52 at flange 56, and a lower rigid container segment 58. Flange 56 of container 50 is coupled to the interior region of side wall 60 of lower container segment 58 by means of heat sealing adhesive, or the like. Of course, threaded coupling between flange 56 and side wall 60 could be provided in a manner similar to that provided in container 10 shown in FIGURES 1 and 2. The bottom wall 62 of container 50 is likewise slightly concave and includes an integral hanger member 40. The upper container segment 52 also includes a neck region 64 which defines an opening covered by cap 66. (It will be noted that the diameter of neck 64 of container 50 is larger as compared to the diameter of neck 24 of container 10 and thus exemplifies that any dimensional and/or geometric configuration may be provided according to the invention so as to obtain access to the interior of the containers 10 and 50.)

The bottom 54a of bladder 54 is spaced from the bottom wall 62 of lower container segment 58 so as to establish a lower sub-container 70 therebetween in which liquid and/or solid material may be contained. The integral bladder 54 and upper container segment 52, on the other hand, collectively establish an upper sub-container 72 so as to contain another (or the same) liquid and/or solid therein. Thus, the material filling sub-containers 70 and 72 may be transported and stored in a segregated manner but may be mixed internally within the container 50 at the point of use simply by rupturing the bladder 54. That is, when it is desired to mix the material contents of sub-containers 70 and 72, a user may insert a sharp implement through opened neck 64 and thus puncture the bladder 54. Thereafter, the cap 66 may be replaced and the container 50 shaken so as to ensure adequate material mixing. Of course, the contents of sub-containers 70 and 72 may be used separately, in which case, it is preferred that the upper container segment 52 be provided with threads or like means so that it is removably coupled to the lower container segment 58.

When preparing the container 50 for use as a unitary mixing means for two materials, one of the materials will first be introduced into the lower container segment 58. That is, a predetermined volume of material is introduced into container segment 58 so that the material occupies the lower sub-container 72 when the upper and lower container segments are coupled to one another. The other material may then be introduced into the upper sub-container 70 (either before or after the upper and lower container segments 12, 18, respectively are coupled to one another) and the cap 66 is placed over neck 64. Thereafter, point-of-use mixture of the two materials in sub-containers 70 and 72 may be accomplished in the manner described above.

The embodiment of container 50 shown in FIGURE 4 is thus advantageous to, for example, allow transport, storage and point-of-use mixture for two dissimilar liquids, a liquid and a solid, or two dissimilar solids, for example. This feature may be useful to prolong the useful life of a chemical mixture, for example, or to provide chemical reaction between the contents of sub-containers 70 and 72 at the point of use. And, container 50 may also be used to transport food stuffs, for example, a cereal and a liquid dairy product, so that they may be mixed just prior to consumption.

With reference now to FIGURES 5 through 10, a dispensing cap in accordance with this continuation-in-part application is illustrated. A beverage container, and in an exemplary embodiment a wine bottle 74, includes a substantially rigid upper segment 76, a flexible bladder as described hereinabove, but not shown in FIGURE 5, and a substantially rigid lower segment 78. The upper and lower segments 76, 78 and bladder are preferably constructed of materials as disclosed hereinabove with respect to the container illustrated in FIGURES 1-4.

In addition, the bottle 74 tapers to a neck 80 which defines an opening which is engaged by a dispensing cap 82.

The cap 82 includes a hollow, generally cylindrical body portion 84, an upper, radially outwardly directed flange portion 86. It will be understood that the body portion which in FIGURE 5 is shown as a plug-type closure, may be tapered slightly at its end remote from the flange portion 86 to facilitate insertion of the plug within the bottle opening. In addition, the body portion may be provided with axially spaced annular ribs 88 which provide tight frictional engagement with the interior surface of the bottle neck.

The dispensing cap is provided with a through passageway 90 (FIGURES 8 and 9) extending through the body portion and upper radial flange portion. In that area of passageway which is gen-

erally adjacent the upper radial flange, there may be provided one or more annular grooves 92 for a purpose to be explained below.

In addition, the through-passageway 90 terminates at an annular shoulder 94 which is located just below a substantially flat top surface 96 of the flange portion 86.

As best seen in FIGURES 8 and 9, a primary seal member 98 is received within the through passageway 90. More specifically, the primary seal member 98 is generally cup-shaped and includes an annular skirt or wall 100 which terminates at an upper, radially outwardly directed flange 102, and which is doubled back on itself at its lower end 104 to form an upwardly directed, flattened tubular portion 106 which is provided with a longitudinally extending slit 108 which forms the dispenser cap discharge opening.

The annular skirt or wall 100 is provided on its exterior surface with one or more axially spaced, annular ribs 110 which are designed to fit within one or more of the above described annular grooves 92.

In addition, the radially outwardly directed flange 102 is sized to seat on the annular shoulder 94 when the primary seal is pressed into the through passageway 90. In its fully inserted position, the flange 102 of the primary seal lies flush with the top surface 96.

By slitting the flattened tubular portion 106, a pair of opposed lips 112, 114 are formed on either side of the slit 108. It will be understood that during normal circumstances, the resilient and flexible lips 112, 114 are biased into a normally closed position, as best seen in FIGURE 10.

However, in use, i.e., when the bottle is tilted in the normal course of discharging liquid therefrom, the flow of liquid will force the lips 112, 114 to separate, thereby permitting flow through the primary seal as best seen in FIGURE 12. When the bottle is returned to its upright position, the lips 112, 114 assume their normally closed position.

It is to be noted in this regard that the primary seal 98 is comprised of a flexible, resilient material such as a thermoplastic elastomer or rubber. The remainder of the dispensing cap is constructed of a more rigid plastic material, such as a polyolefin.

An overcap 116 is provided, and is preferably integrally molded with the dispensing cap so as to be pivotally attached thereto by an integral hinge 118. It will be understood, of course, that the overcap 116 may be separately manufactured and nevertheless useable with the dispensing cap exactly as described hereinbelow.

The undersurface 120 of the overcap 116 is provided with an annular skirt or ring 122 which is adapted to fit snugly within the primary seal member 98 when pivoted to a closed position best seen

in FIGURE 8. Thus, the skirt or ring 122 serves as a secondary seal, preventing any liquid which may have escaped through the slit 108 from also escaping the dispenser cap.

In addition, undersurface 120 is provided with a pair of adjacent lugs 124, 126 which are spaced apart a distance corresponding substantially to the combined thickness of lips 112, 114. The lugs are tapered at their free ends 128, 130 so as to guide the lips between the lugs as the overcap is closed. In this regard, the lugs may be spaced apart a distance slightly less than the combined thickness of the lips so that, upon closing, the lips are lightly compressed. Thus, a third sealing means is provided which insures that no liquid will escape the container even when the container is inverted, so long as the ring 122 is snugly fitted within the primary seal member 98, i.e., when the overcap 116 is in its closed position.

In a further aspect of the invention, the dispenser cap may be adapted for attachment to screw thread-type containers. Thus, as illustrated in FIGURES 6 and 9, the cap 132 has a body portion which includes an outer, depending, annular skirt 134 which is provided with a screw thread 136 about its interior surface for mating engagement with conventional threads provided on the container neck. In addition, a relatively shorter, interior, annular skirt 138 is provided for receiving the primary seal member 98 in the same manner as described hereinabove.

It will be understood that the above-described dispenser cap may be sized for use with virtually any liquid dispensing container to provide effective and automatic closing of the dispensing aperture or opening upon the container assuming an upright position. However, when utilized with a bladder-type container as herein described, or with conventional bladder-type containers, even more effective sealing action is obtained. This is because of the vacuum created within the bladder when liquid is dispensed therefrom, but is not replaced by air as the bottle is returned to an upright position. The vacuum thus tends to collapse the bladder, while at the same time, drawing the lips 112, 114 downwardly and inwardly into tight, sealing engagement with each other. As a result, the dispenser cap of this invention provides in one exemplary embodiment, three structural sealing means in combination with an additional vacuum seal, thereby effectively preventing egress of liquid and ingress of air, thereby also insuring prolonged freshness of the container contents. This, of course, is especially desirable in the case of wine and other potable liquids.

Thus, while the invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it

is to be understood that the invention is not to be limited to the disclosed embodiment, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

Claims

1. A container (10) comprising:
a rigid upper container segment (12) which establishes one portion of a total volumetric capacity for the container (10);
a rigid lower container segment (20);
means (36) for coupling said upper and lower container segments (12, 20) one to another; and
a flexible bladder (14) which establishes a remaining portion of the total volumetric container capacity so that said upper container segment (12) and said bladder (14) collectively establish said total volumetric container capacity,
said bladder (14) being connected to said upper container segment (12) such that said bladder (14) depends from said upper container segment (12) and is housed within said lower container segment (20), wherein
said upper container segment (12) also defines an access opening (24) to permit access to contents within said upper container segment (12) and bladder (14).
2. A container (10) as in claim 1, wherein said upper container segment (12) defines an external base peripheral surface (32), and includes an annular flange (34) inwardly radially recessed with respect to said base surface (32) so that said flange (34) is accepted within an upper region of said lower container segment (20).
3. A container (10) as in claim 1, wherein said coupling means (30) couples said flange (34) and said upper region of said lower container segment (20).
4. A container (10) as in claim 1, wherein said lower container segment (20) includes a bottom wall (22), and the container (10) further comprises hanger means (40) attached to said bottom wall (22) for facilitating supported inversion of the container (10).
5. A container (10) as in claim 4, wherein said hanger means (40) is connected to said bottom wall by means of an integral hinge (44) so as to be foldable between a stowed position, wherein said hanger means (40) is substantially flush against said bottom wall (22), and an extended position, wherein said hanger means (40) extends from said bottom wall (22).
6. A container (10) as in claim 5, wherein said bottom wall (22) is concave such that said hanger means (40), in said stowed position thereof,

presents no obstacle to the container (10) when said lower container segment (20) rests upon a surface.

7. A container (10) as in claim 2, wherein said upper container segment (12) is substantially conically shaped.

8. A container (10) as in claim 7, wherein said upper container segment (12) includes a neck region (24) extending upwardly from said upper container segment, said access opening being defined by said neck region (24).

9. A container in claim 8, further comprising a dispensing cap (26, 82) removably connected to said neck region so as to close said defined opening thereof.

10. A container as in claim 9, wherein said dispensing cap includes a body portion (84) provided with means (90, 92, 94) for receiving a first sealing member (98), said first sealing member (98) including a generally cup-shaped portion (100, 102, 104) and a flattened tubular portion (106) extending upwardly from said cup-shaped portion, wherein said flattened tubular portion is provided with an elongated slit (108) at an upper end thereof to form a pair of opposed, flexible lips (112, 114) which define a dispensing aperture; and wherein said body portion is comprised of a relatively rigid plastic material and said first sealing member (98) is comprised of a relatively soft, flexible plastic material.

11. A dispenser cap adapted to being removably attached to an open end of a container body characterized in that said dispenser cap includes a body portion (84) having first sealing means (98) which includes a self-closing aperture, an overcap (116) hinged to said body portion for movement between open and closed positions, said overcap including second and third sealing means (122, 124, 126) for engaging said first sealing means when said overcap is in the closed position.

12. A container and dispensing cap assembly as defined in claim 11 wherein said first sealing means comprises a flexible, resilient member (98) having a flattened tubular portion (106) in which said self-closing aperture is provided in the form of an elongated slit (108).

13. A container and dispensing cap assembly as in claim 12 wherein said flattened tubular portion (106) extends away from a closed end of said container body and wherein said slit and said flattened tubular portion define a pair of opposed, flexible lips (112, 114) which are adapted to open under fluid pressure to permit dispensing of said contents and to automatically close upon cessation of the fluid pressure.

14. A container and dispensing cap assembly as in claim 11 wherein said second sealing means comprises an annular skirt portion (122) on an underside (120) of said overcap.

15. A container and dispensing cap assembly as defined in claim 13 wherein said third sealing means comprises a pair of elongated lug members (124, 126) on an underside (120) of said overcap.

16. A container and dispensing cap assembly as defined in claim 15 wherein said lug members (124, 126) engage said lips (112, 114) on either side thereof when said overcap is in said closed position.

17. A container and dispensing cap assembly as defined in claim 16 wherein said lug members (124, 126) are provided with tapered surfaces (128, 130) which cam said lips into tight sealing engagement.

18. A method of using a container (50) so as to separately store and/or transport at least two materials (70, 72), and then to allow the two materials (70, 72) to be mixed with one another internally of the container (50), said method comprising the steps of:

(a) selecting a container (50) of the type having a rigid upper container segment (52), a flexible bladder (54) integral with said upper container segment (52) so as to establish therewith an upper sub-container in which one (72) of said two materials (70, 72) is contained, and a lower container segment (60) connected to the upper container segment (52) and which establishes with said bladder (54) a lower sub-container in which a second material (70) is stored; and

(b) rupturing the bladder (54) so as to establish communication between said upper and lower sub-containers and thus allow mixing of said two materials (70, 72) contained therewithin.

19. A method of mixing at least two materials (70, 72) internally of a container (50) of the type having a rigid upper container segment (52), a flexible bladder (54) integral with the upper container segment (52) so as to establish therewith an internal upper sub-container, and a lower container segment (60) adapted to being connected to said upper container segment (52) so as to establish with said bladder (54) a lower sub-container, said method comprising the steps of:

(a) introducing a predetermined volume of one of the materials (70) into said lower container segment (60) so that when said upper and lower container segments (52, 60, respectively) are connected to one another, said predetermined volume of the one materials (70) occupies said lower sub-container;

(b) connecting said upper and lower container segments (52, 60, respectively) one to another;

(c) introducing the other material (72) into said upper sub-container; and

(d) rupturing the bladder (54) so as to establish communication between said upper and lower sub-containers and thus allow mixing of said one and other materials (70, 72) therewithin.

20. A method as in claim 19, wherein step (c) is practiced before step (b).

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Neu eingereicht / Newly
Nouvellement dépos

FIG. 1

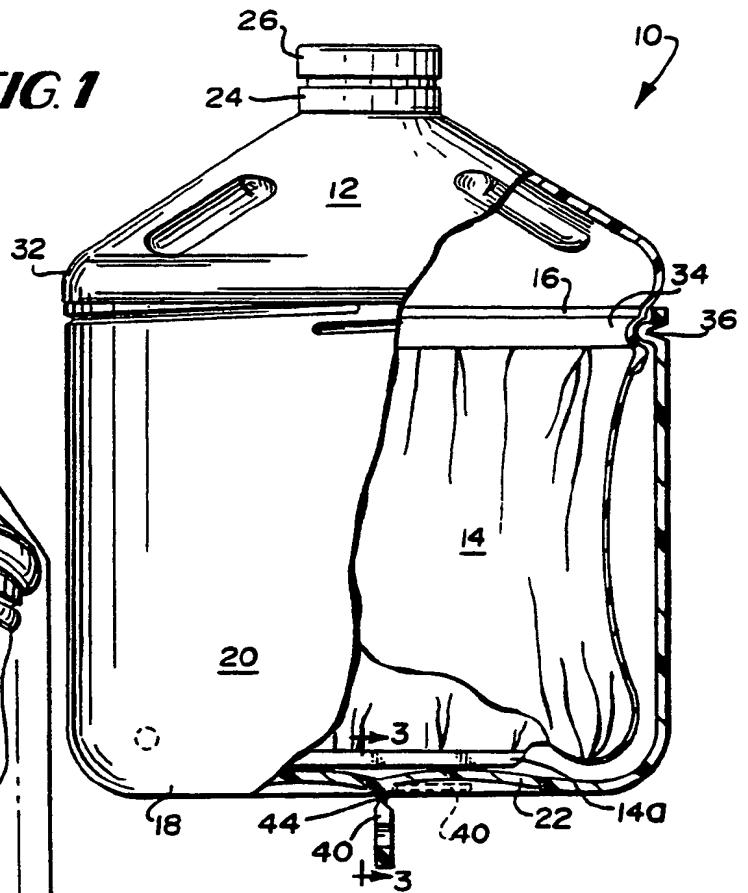
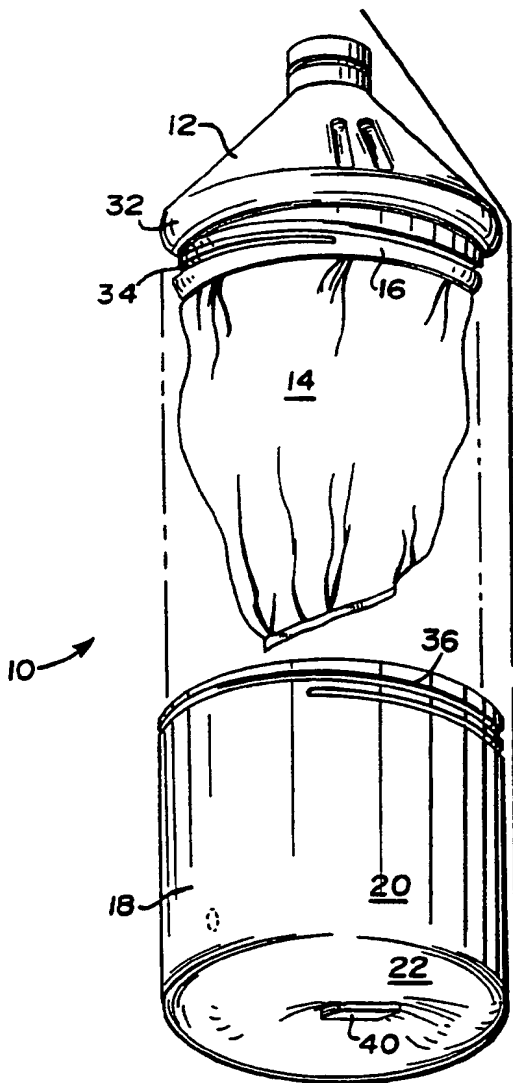
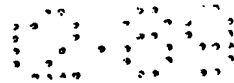


FIG. 2





Neu eingereicht / Neu
Nouvellement déposée

FIG. 3

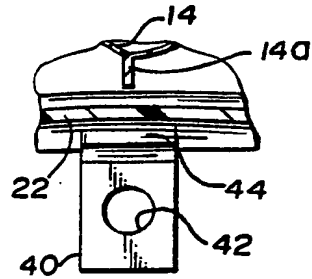
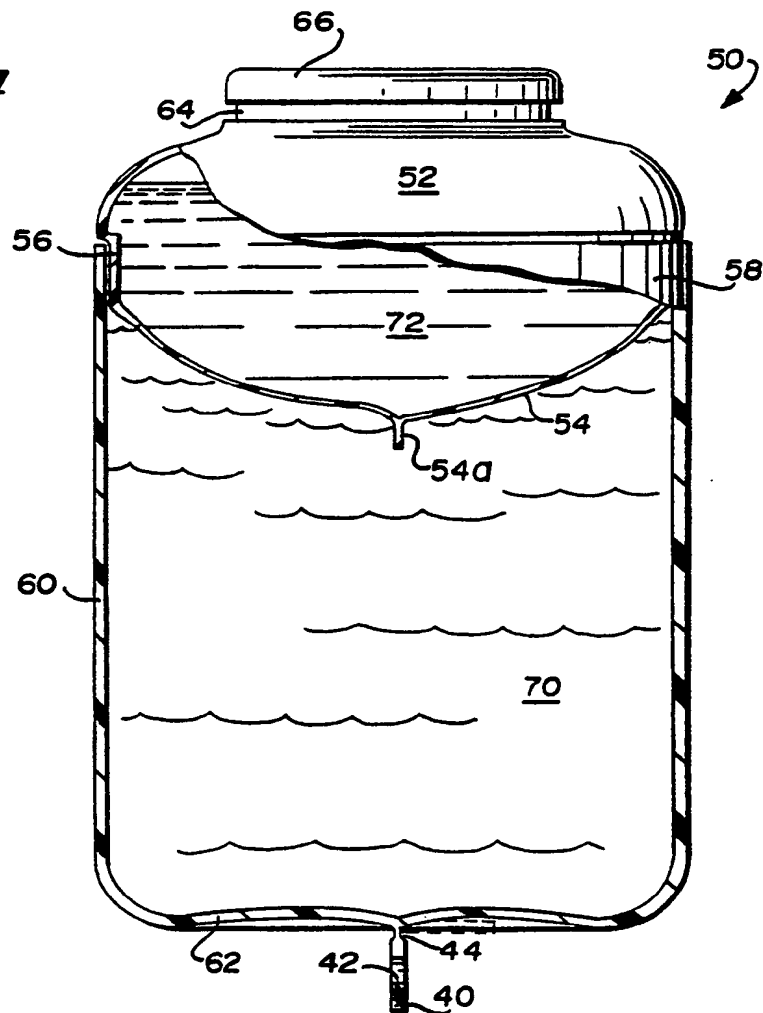


FIG. 4



Neu eingereicht / New
Nouvellement dépo.



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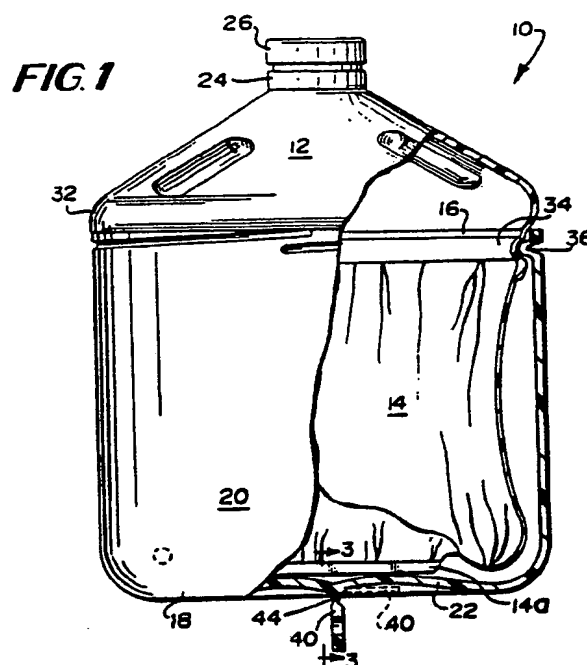
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54 **Container with unitary bladder and associated dispenser cap.**

57 A container (10) includes a substantially rigid upper container segment (12), a flexible bladder (14) depending from the upper container segment (12), and a lower substantially rigid container segment (20) attached to the upper container segment (12) so that the flexible bladder (14) is housed therewithin. The upper container segment (12) presents a smooth exterior continuation of the lower container segment (20) so that the two segments (12 and 20) visually appear to be formed in a unitary manner. A foldable hanger (40) may be provided integrally on the bottom wall (22) of the container (10) so as to facilitate the container's supported inversion. In one embodiment, the bladder (14) is spaced from the container bottom wall (22) so as to establish a sub-container (70) therebetween. A self-closing dispensing cap (82) is provided which includes a pair of resilient, flexible sealing lips (112, 114) which are defined in part by an elongated discharge slit (108). An overcap (116) is also provided which includes additional sealing means (124, 126) for engaging the sealing lips when the overcap (116) is in a closed position.





European Patent
Office

EUROPEAN SEARCH REPORT

Application number

EP 88 31 1699

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	US-A-3 739 827 (SONDEL) * Column 2, lines 11-52; column 3, lines 27-29; figures 1-4 *	1,3,7	A 61 J 1/00 B 65 D 25/16 B 65 D 47/44 B 65 D 81/32
A	--	2	
A	WO-A-85 01 269 (AVERY) * Page 23, lines 22-39; page 24, lines 3-8; figure 32 *	1,7,8	
A	--		
A	US-A-2 855 933 (ERIKSON) * Claims; figures *	1	
A	--		
A	US-A-4 395 378 (ALBERGHINI) * Column 3, lines 40-43,48-51; column 4, lines 4-14; figure 5 *	4,5,6	
A,D	--		
A,D	US-A-3 773 233 (SOUZA) * Column 2, line 58 - column 5, line 34; figures 1,2,4 *	9,10	A 61 J B 65 D
A	--		
A	FR-A-1 354 664 (HUNTLEY BOORNE) * The whole document *	18-20	

THE PRESENT SEARCH REPORT IS NOT VALID FOR THE PURPOSES OF THE EUROPEAN PATENT CONVENTION			
Place of search THE HAGUE		Date of completion of the search 25-10-1989	Examiner BAERT
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EP Form 1503 03 82



CLAIMS INCURRING FEES

The present European patent application composed at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
- namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

1. Claims 1-10, 18-20: Container comprising a rigid upper part, a rigid lower part and a flexible bladder connected to said upper part.
2. Claims 11-17: Container having a dispensing cap.

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.
- namely claims: 1-10, 18-20